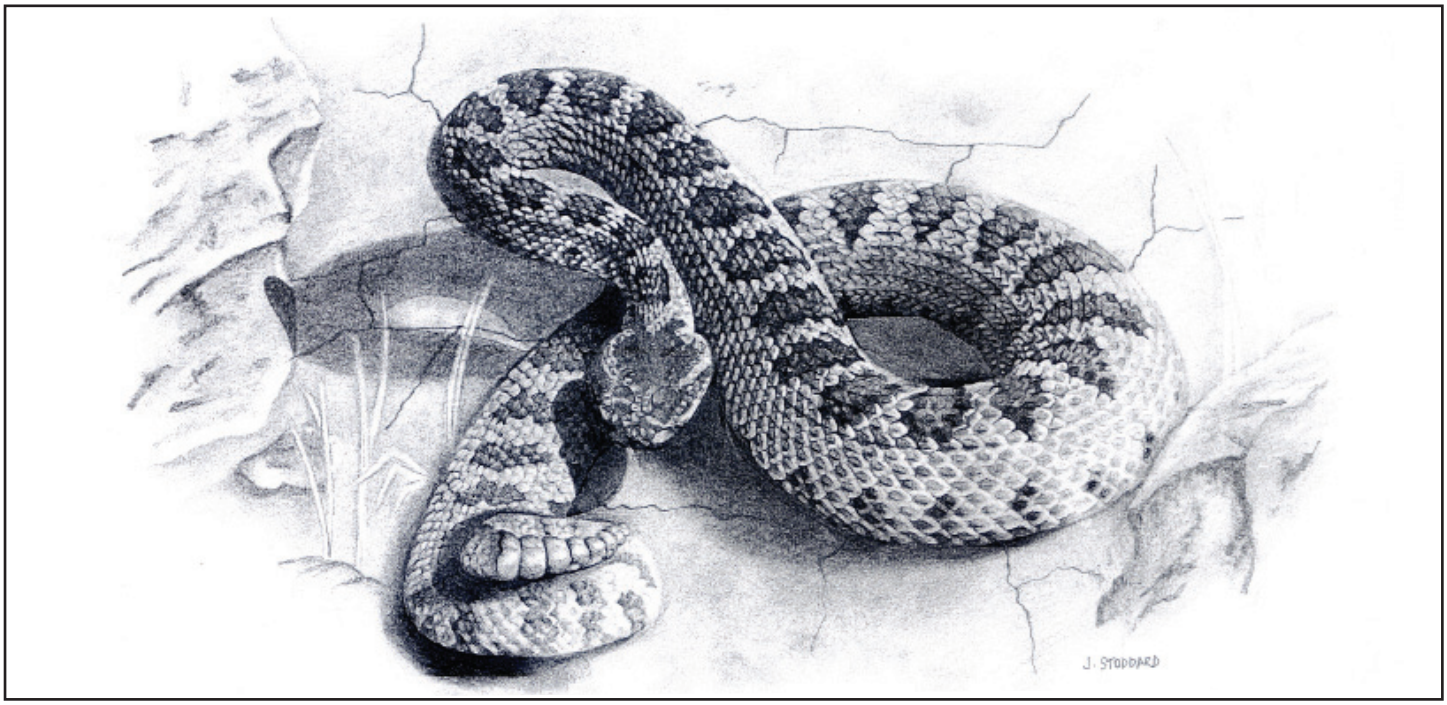
Western Rattlesnake

(Crotalus oreganus)



Few sounds evoke panic as quickly as the buzz of a rattlesnake. As far as humans go, the sight and sound of a rattlesnake ranks pretty high on the avoidance scale. We seem to be frightened and mesmerized at the same time. The parade of TV programs about poisonous snakes and snake handlers attests to that.

Mankind's love-hate relationship and fascination with snakes dates back to our earliest recorded history. We see evidence in Egyptian hieroglyphics, Mayan sculptures, and ancient Indian rock art. Snakes have long been associated with the supernatural as well as shaman and medicine men.

Most people have little affection for snakes, especially poisonous ones. It's difficult to cultivate positive feelings toward a scaly, legless creature, capable of unleashing excruciating pain or death. Rattlesnakes are often placed in the same category as poisonous spiders and nuisance insects. They are often killed on sight. However, snakes in general, and rattlesnakes in particular, occupy an important ecological niche, and are beneficial to man, especially in their control of rodents, which are their most commonly consumed prey.

Rattlesnakes are among the most highly evolved of all snakes as shown by a combination of many specialized traits. These include the rattle, pit organs, and erectable fangs. Rattlesnakes occur almost exclusively in North America with the southern end of their range dipping into South America. More than 20 species and numerous subspecies of rattlesnakes have been recognized in the United States.

The most common rattlesnake in Utah is the western rattlesnake (*Crotalus oreganus*), with two of its five subspecies being found in Utah: the Great Basin Rattlesnake (*C. o. lutosus*) and the midget faded rattlesnake (*C. o. concolor*). Herpetologists formerly classified the western rattlesnake as *Crotalus viridis*, but this classification is now reserved for the prairie rattlesnake.

Utah is home to additional rattlesnake species and subspecies. These include the Mojave (*Crotalus scutulatus*) and speckled (*Crotalus mitchellii*) rattlesnakes and the sidewinder (*Crotalus cerastes*), which occupy the extreme southwest corner of the state, as well as the Hopi rattlesnake (*Crotalus viridis nuntius*), restricted to the southern part of the state, mostly along the Utah–Arizona border, and the prairie rattlesnake (*Crotalus viridis viridis*) found in southeastern Utah.

Although the subject of this notebook series is the western rattlesnake, much of the following information is true of rattlesnakes in general. The western rattlesnake was chosen to be featured because two of this species' five currently recognized subspecies are the most common rattlers found in Utah.

Distribution and Habitat

The geographic distribution of the western rattlesnake in Utah encompasses much of the state. The Great Basin subspecies occurs throughout much of western Utah, and the midget faded subspecies is found throughout much of eastern Utah. Habitat preferences of the western rattlesnake are broad. This species may range from mountaintops to desert plains. Although rattlesnakes are mostly found on the ground or in rocks, they will occasionally climb trees or shrubs and can swim.

Western Rattlesnake (*Crotalis oreganus*) Distributions of Subspecies

A - Northern Pacific Rattlesnake (*C. o. oreganus*)
B - Great Basin Rattlesnake (*C. o. lutosis*)
C - Midget faded Rattlesnake (*C.o. concolor*)
D - Grand Canyon Rattlesnake (*C. o. abyssus*)
E - Southern Pacific Rattlesnake (*C. o. helleri*)

Description

The western rattlesnakes found in Utah are typically much smaller than their relatives in states to the south and southeast, which can be more than twice the length of Utah's rattlers. An adult of the Great Basin subspecies usually measures between 30-54 inches. The smaller midget faded subspecies is almost always less than 2 feet in length. Males typically grow larger than females.

The color of a western rattlesnake is variable, and often blends with the background color of its environment. It may be greenish, brownish, yellowish or even pinkish, with darker patches of diamonds, ovals or hexagons running down the length of the back. All rattlesnakes have triangular-shaped heads—like an arrowhead—that distinguishes a rattler from other snakes in Utah.

Rattlesnakes are among a subfamily of venomous snakes known as pit vipers. They have a pair of pit organs, adjacent to each nostril that detects heat, thereby enhancing the snake's ability to locate warm-blooded prey.

The hollow, moveable fangs at the front edges of the upper jaw of rattlers function like hypodermic needles. When not in use, the fangs are folded back against the upper jaw. At the base of each fang is a duct that leads to the venom glands in the roof of the mouth. When striking, the fangs are rotated downward, and venom, pushed by means of muscular contractions, is injected through the fangs into the intended victim. The venom of western rattlesnakes is hemotoxic, which means it breaks down the circulatory system, causing widespread hemorrhaging. The venom of the midget faded rattlesnake also contains neurotoxins and is one of the most potent venoms found in North American snakes. In addition to immobilizing and killing its prey, the venom of a rattlesnake (derived from saliva) also initiates the digestive process, starting the break down of the prey's tissue.

One of many distinctive characteristics of snakes is the flicking forked tongue, which serves as the snake's primary olfactory organ. The main function of a rattlesnake's nostrils is respiration. As the tongue protrudes from the mouth, it picks up airborne molecules. As the tongue is retracted, it touches the Jacobson's organ (also known as the vomeronasal organ) on the roof of the snake's mouth, which transmits messages to the brain about its environment, including prey and other snakes.

A snake's hearing is unique. Although they have no external ear, vibrations are transmitted from the ground through bones, muscles and the jawbone. These vibrations are picked up by an inner ear and then transmitted to the brain.

The pupils of a rattlesnake are elliptical, like the eyes of a cat. In bright light, the pupils constrict and admit very little light into the retina. Under low light conditions, the pupils dilate and maximize available light for improved night vision. A snake's visual acuity is better at close range.

The jaws of a rattlesnake have an extra bone and joint that allow for a gape of nearly 180 degrees when striking a target or engulfing prey. This anatomical characteristic gives the appearance of jaw dislocation, and helps a rattler swallow prey much larger than itself.

The most unique characteristic of a rattlesnake is its rattle. Found at the tip of its tail, the rattle is a series of loosely jointed and hollow segments. These segments are a series of modified scales, composed of keratin, which is the same material of a person's fingernails. At the shake of its tail, a rattlesnake generates a buzzing sound as one nested segment or the rattle comes in contact with the next.

Each time a rattlesnake sheds its skin, a new rattle segment is added. Rattlesnakes shed their skin at least once a year when they emerge from hibernation in the spring. A young, growing individual may shed its skin several times a year. An older snake may also shed more than once a year, depending

largely on the abundance of prey. Over the course of its daily and seasonal activities, rattles may wear out and drop off. These factors explain why the number of rattle segments cannot be used to determine a rattlesnake's age.

Life History

The life span of a rattlesnake can be more than 20 years in captivity. Life in the wild is hazardous and unpredictable, dramatically shortening the potential life span. Newborn snakes are especially vulnerable, and a large percentage fail to reach their first year because they are unable to find food before they must enter their first winter's hibernation. Without sufficient stored fat they are unable to survive the winter.

Snakes are cold blooded. Bodily functions are impaired by extreme heat or cold so snakes behaviorally regulate their body temperature by basking in the sun, retreating to shade, or moving to a warmer or cooler place. During the heat of summer, a rattlesnake's daily activity is typically nocturnal or crepuscular. During especially hot spells, an individual may aestivate in a particularly cool area to wait out the extreme heat.

In September rattlesnakes in Utah return to a traditional hibernaculum, where they congregate with other snakes to spend the winter. Rattlesnakes often den communally with other species. Dens are typically in deep rocky crevices, which protect the snakes from freezing. As space permits, hibernating snakes curl or ball up together.

In April or May, warming temperatures encourage rattlers to emerge from their winter dens and disperse into their summer home range to feed and mate. The home range size of western rattlesnakes varies greatly, though most probably stay within approximately 5 miles of their winter dens. Dispersal is not only lateral but can be up, down and across mountain ranges. Movement patterns tend to vary by sex and the environment. Males tend to range more widely to find a mate and to locate prey.

Reproduction

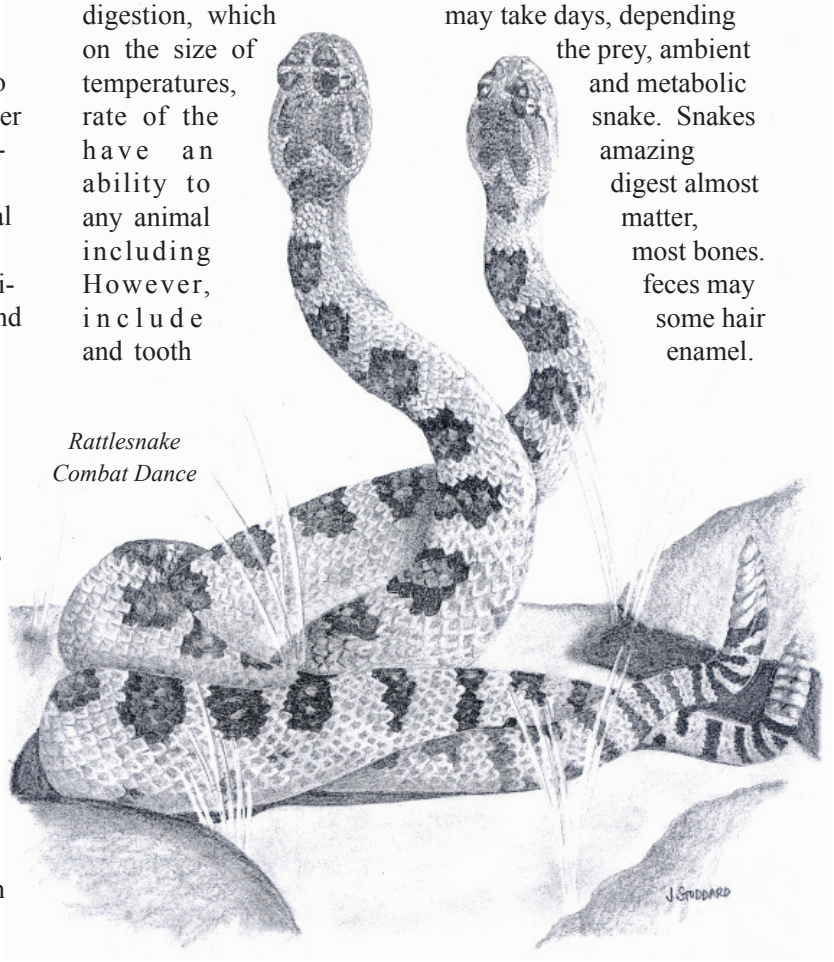
Western rattlesnakes in Utah reach sexual maturity at about three years of age. Breeding takes place in early summer after dispersing from the hibernaculum. Males find females by following olfactory cues such as pheromone trails. As eligible males converge, they compete in a "combat dance" in which they face off, rise up as high as possible and then intertwine, with each snake attempting to push the rival down. The strongest male earns breeding rights.

During mating, both male and female intertwine. The male has two organs called hemipenes, which are positioned side by side, and either can be used when mating with the female. The inseminated female carries her unborn offspring for approximately 90 days. Rattlesnakes were formerly considered ovoviviparous, which refers to an animal that produces eggs but retains them inside the female's body until hatching. Rattlesnakes are now considered viviparous, meaning they bring forth live young, as is the case with most mammals. The western rattlesnake typically bears 4 to 12 young. Birth generally takes place in late summer. Soon after birth, the mother abandons her young.

Hunting and Diet

Rattlesnakes are ambush predators, utilizing still-hunting techniques to kill prey. Complete stillness coupled with their natural camouflage allows them to blend perfectly with their background environment. When hunting, they may also hide behind objects such as rocks, bushes and tree limbs. After administering a venomous strike, the rattler waits for its prey to die. If the prey moves off, the snake will follow the prey's scent trail to locate its meal. Western rattlesnakes typically prey on small mammals and occasionally small birds. Other prey such as amphibians or other snakes are quite rare in their diet.

Prey is swallowed head first, allowing the fur or scales to slide down the esophagus with minimal resistance. Through a series of coordinated motions of its jaws, aided by rearward retracting teeth, a rattler is able to move the animal slowly down its throat into its stomach. The snake then seeks shelter for its own protection during the process of digestion, which may take days, depending on the size of the prey, ambient temperatures, and metabolic rate of the snake. Snakes have an amazing ability to digest almost any animal matter, including most bones. However, feces may include some hair and tooth enamel.



Rattlesnake Combat Dance

Rattlesnakes and People

People are the number one enemy of rattlesnakes. Snakes are are often killed on sight and entire populations are destroyed by the destruction of winter dens during hibernation. Under Utah law indiscriminate killing of snakes and all other reptiles is prohibited. Typically rattlesnakes are docile and not aggresive unless disturbed.

Habitat destruction and fragmentation as a result of human activities also reduce or eliminate populations. Rattlesnakes often warm up by spreading their bodies on asphault roads to absorb heat. As a result, road mortality can be significant in some populations as well.

Predators of rattlesnakes include birds of prey, predatory mammals and even other snakes. For example, kingsnakes are ophiphagous or snake eaters, and will prey upon rattlesnakes. Gophersnakes will opportunistically feed upon rattlesnakes as well. Both kingsnakes and gophersnakes are immune to the venom of a rattlesnake and kill by constriction.

Humans are not immune to the venom of rattlesnakes. When a rattlesnake bites defensively, it can regulate the amount of venom injected. Some are “dry bites,” in which fangs are inserted, but no venom is expressed. Venomous bites pose different levels of danger, based on a number of factors. These include the amount and type of venom injected, size of the snake, length of time of fang contact, and velocity and placement of the strike.

A pair of puncture wounds and redness at the site will evidence a bite. Pain may or may not initially occur, but has been described as burning, stinging and tingling. Over time, other symptoms will appear. These may include swelling, discoloration, nausea, vomiting, headache, labored breathing and unconsciousness in serious bites.

Over the years there have been varying opinions about the proper first aid measures for a snake bite. The Center for Disease Control (CDC) advises seeking immediate medical attention. From a safe distance, take a picture of the snake (if you have a camera). Keep the victim calm and the site of the bite below the heart. The CDC warns against cutting into the wound or trying to suck out venom. Do not apply ice or immerse in water. Do not apply a tourniquet or give the victim alcohol or caffeinated beverages.

What You Can Do

The best defense against rattlesnakes is vigilance. Watch where you step and where you place your hands. When working or recreating in areas where venomous snakes may be found, wear high top boots, snake proof chaps, protective pants and heavy gloves.

Despite their fearsome reputation, rattlesnakes are quite shy and do not come after people. They will strike only in self-defense. Learning to be alert and behaving in ways that do not frighten rattlesnakes will greatly reduce your chances of a confrontation. If you do encounter a rattlesnake, back away slowly to a safe distance several feet away.

Around your home, keep rodent populations down by removing food sources such as spilled seed from bird feeders. Clean out prime rodent habitat such as sheds, woodpiles and underbrush. Use rodent traps as necessary. Eliminate potential hiding places for snakes including sheets of plywood, carpeting, sheet metal, woodpiles, etc. A rattlesnake can use anything that offers refuge from temperature extremes or predators. Make sure the foundations of your home and outbuildings are sealed and animal-proof.

Don't try to catch rattlesnakes or taunt them. Almost all snakebites happen this way. In Utah, it is illegal to collect rattlesnakes to keep, sell or trade.

The more you learn about rattlesnakes and how they live, the more aware you will be of where you might expect to encounter them and how to avoid them.

Additional Reading

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